

SEQUENCE LISTING

<110> Luche, Ralf M.
Wei, Bo

<120> DSP-15 DUAL-SPECIFICITY PHOSPHATASE

<130> 200125.433

<140> US

<141> 2001-09-18

<160> 27

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1980

<212> DNA

<213> Homo sapiens

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cggcctcccc	ggctccgcta	cctgctggta	gtttctacac	gagaaggaga	aggtctgagc	420
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ccgggtggca	gtgccctcac	ctgggccagc	cactaccagg	agagactgaa	ctccgaacag	720
agctgcctca	atgagtggac	ggctatggcc	gacctggagt	ctctgcggcc	tcccagcgcc	780
gagcctggcg	ggctcctcaga	acaggagcag	atggagcagg	cgatccgtgc	tgagctgtgg	840
aaagtgttgg	atgtcagtga	cctggagagt	gtcacttcca	aagagatccg	ccaggctctg	900
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ctgctggtgg	cacagcggga	ccgagcctcc	cgcatcttcc	cccacctcta	cctgggctca	1020
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cagtcagtgg	ttaccctcca	gggcagtgcc	gtggtggcca	accggaccca	ggccttccag	1860
gagcaggagc	aggggcaggg	gcaggggcag	ggagagccct	gcatttctct	tacgcccagg	1920
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<210> 2
 <211> 659
 <212> PRT
 <213> Homo sapiens

<400> 2

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Gln	Arg	Arg	Gln	Ser	Phe	Ala	Val	Leu	Arg	Gly	Ala	Val	Leu	Gly	Leu
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Gln	Asp	Gly	Gly	Asp	Asn	Asp	Asp	Ala	Ala	Glu	Ala	Ser	Ser	Glu	Pro
	50					55					60				
Thr	Glu	Lys	Ala	Pro	Ser	Glu	Glu	Glu	Leu	His	Gly	Asp	Gln	Thr	Asp
65					70					75					80
Phe	Gly	Gln	Gly	Ser	Gln	Ser	Pro	Gln	Lys	Gln	Glu	Glu	Gln	Arg	Gln
				85					90					95	
His	Leu	His	Leu	Met	Val	Gln	Leu	Leu	Arg	Pro	Gln	Asp	Asp	Ile	Arg
			100					105					110		
Leu	Ala	Ala	Gln	Leu	Glu	Ala	Pro	Arg	Pro	Pro	Arg	Leu	Arg	Tyr	Leu
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Leu	Val	Val	Ser	Thr	Arg	Glu	Gly	Glu	Gly	Leu	Ser	Gln	Asp	Glu	Thr
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Val	Leu	Leu	Gly	Val	Asp	Phe	Pro	Asp	Ser	Ser	Ser	Pro	Ser	Cys	Thr
145					150					155					160
Leu	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Gln	Val	Tyr	Leu	Asp
				165					170					175	
Gly	Asp	Gly	Gly	Phe	Ser	Val	Thr	Ser	Gly	Gly	Gln	Ser	Arg	Ile	Phe
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Lys	Pro	Ile	Ser	Ile	Gln	Thr	Met	Trp	Ala	Thr	Leu	Gln	Val	Leu	His
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Gln	Ala	Cys	Glu	Ala	Ala	Leu	Gly	Ser	Gly	Leu	Val	Pro	Gly	Gly	Ser
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Ala	Leu	Thr	Trp	Ala	Ser	His	Tyr	Gln	Glu	Arg	Leu	Asn	Ser	Glu	Gln
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Ser	Cys	Leu	Asn	Glu	Trp	Thr	Ala	Met	Ala	Asp	Leu	Glu	Ser	Leu	Arg
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Pro	Pro	Ser	Ala	Glu	Pro	Gly	Gly	Ser	Ser	Glu	Gln	Glu	Gln	Met	Glu
			260					265						270	
Gln	Ala	Ile	Arg	Ala	Glu	Leu	Trp	Lys	Val	Leu	Asp	Val	Ser	Asp	Leu
	275						280					285			
Glu	Ser	Val	Thr	Ser	Lys	Glu	Ile	Arg	Gln	Ala	Leu	Glu	Leu	Arg	Leu
	290					295					300				
Gly	Leu	Pro	Leu	Gln	Gln	Tyr	Arg	Asp	Phe	Ile	Asp	Asn	Gln	Met	Leu
305					310					315					320
Leu	Leu	Val	Ala	Gln	Arg	Asp	Arg	Ala	Ser	Arg	Ile	Phe	Pro	His	Leu
				325					330					335	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ala	Asn	Leu	Glu	Glu	Leu	Gln	Arg
			340					345					350		
Asn	Arg	Val	Thr	His	Ile	Leu	Asn	Met	Ala	Arg	Glu	Ile	Asp	Asn	Phe
		355					360					365			
Tyr	Pro	Glu	Arg	Phe	Thr	Tyr	His	Asn	Val	Arg	Leu	Trp	Asp	Glu	Glu
	370					375					380				
Ser	Ala	Gln	Leu	Leu	Pro	His	Trp	Lys	Glu	Thr	His	Arg	Phe	Ile	Glu

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385          390          395          400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly
          405          410          415
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr
          420          425          430
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro
          435          440          445
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln
          450          455          460
Gly Ile Leu Thr Ala Ser Arg Gln Ser His Val Trp Glu Gln Lys Val
465          470          475          480
Gly Gly Val Ser Pro Glu Glu His Pro Ala Pro Glu Val Ser Thr Pro
          485          490          495
Phe Pro Pro Leu Pro Pro Glu Pro Glu Gly Gly Gly Glu Glu Lys Val
          500          505          510
Val Gly Met Glu Glu Ser Gln Ala Ala Pro Lys Glu Glu Pro Gly Pro
          515          520          525
Arg Pro Arg Ile Asn Leu Arg Gly Val Met Arg Ser Ile Ser Leu Leu
530          535          540          545
Glu Pro Ser Leu Glu Leu Glu Ser Thr Ser Glu Thr Ser Asp Met Pro
545          550          555          560
Glu Val Phe Ser Ser His Glu Ser Ser His Glu Glu Pro Leu Gln Pro
          565          570          575
Phe Pro Gln Leu Ala Arg Thr Lys Gly Gly Gln Gln Val Asp Arg Gly
          580          585          590
Pro Gln Pro Ala Leu Lys Ser Arg Gln Ser Val Val Thr Leu Gln Gly
          595          600          605
Ser Ala Val Val Ala Asn Arg Thr Gln Ala Phe Gln Glu Gln Glu Gln
610          615          620
Gly Gln Gly Gln Gly Gln Gly Glu Pro Cys Ile Ser Ser Thr Pro Arg
625          630          635          640
Phe Arg Lys Val Val Arg Gln Ala Ser Val His Asp Ser Gly Glu Glu
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Gly Glu Ala

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<210> 3
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 3
Asp Gly Ser Pro Leu Ser Asn Ser Gln Pro Ser Phe Pro Val Glu Ile
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Leu Pro Phe Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
20          25          30
Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
35          40          45
Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys Gln Ile
50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
65          70          75          80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly Val Leu
85          90          95
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
100          105          110

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Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr Asp Ile
    115                      120          125
Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130                      135          140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145                      150          155

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<210> 4
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 4
Asp Gly Ser Pro Val Pro Ser Ser Gln Pro Ala Phe Pro Val Gln Ile
  1          5          10          15
Leu Pro Tyr Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp
    20          25          30
Val Leu Gly Lys Tyr Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn
    35          40          45
Leu Pro Asn Ala Phe Glu His Gly Gly Glu Phe Thr Tyr Lys Gln Ile
    50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu
    65          70          75          80
Ala Ile Ser Phe Ile Asp Glu Ala Arg Ser Lys Lys Cys Gly Val Leu
    85          90          95
Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala
    100         105         110
Tyr Leu Met Gln Lys Met Asn Leu Ser Leu Asn Asp Ala Tyr Asp Phe
    115         120         125
Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly
    130         135         140
Gln Leu Leu Asp Phe Glu Arg Thr Leu Gly Leu Ser
    145         150         155

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<210> 5
<211> 156
<212> PRT
<213> Homo sapiens

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<400> 5
Ala Thr Pro Pro Val Gly Leu Arg Ala Ser Phe Pro Val Gln Ile
  1          5          10          15
Leu Pro Asn Leu Tyr Leu Gly Ser Ala Arg Asp Ser Ala Asn Leu Glu
    20          25          30
Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn Val Thr Pro Asn
    35          40          45
Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His Tyr Lys Gln Ile
    50          55          60
Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg Phe Phe Pro Glu
    65          70          75          80
Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn Cys Gly Val Leu
    85          90          95
Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Val Thr Val Ala
    100         105         110
Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp Ala Tyr Asp Leu

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<210> 6
<211> 155
<212> PRT
<213> Homo sapiens
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<210> 7
<211> 154
<212> PRT
<213> Homo sapiens
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<400> 7															
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Leu	Pro	Tyr	Leu	Tyr	Leu	Gly	Ser	Cys	Asn	His	Ser	Ser	Asp	Leu	Gln
			20					25					30		
Gly	Leu	Gln	Ala	Cys	Gly	Ile	Thr	Ala	Val	Leu	Asn	Val	Ser	Ala	Ser
		35					40					45			
Cys	Pro	Asn	His	Phe	Glu	Gly	Leu	Phe	His	Tyr	Lys	Ser	Ile	Pro	Val
	50					55					60				
Glu	Asp	Asn	Gln	Met	Val	Glu	Ile	Ser	Ala	Trp	Phe	Gln	Glu	Ala	Ile
65					70					75					80
Ser	Phe	Ile	Asp	Ser	Val	Lys	Asn	Ser	Gly	Gly	Arg	Val	Leu	Val	His
				85					90					95	
Cys	Gln	Ala	Gly	Ile	Ser	Arg	Ser	Ala	Thr	Ile	Cys	Leu	Ala	Tyr	Leu
			100					105					110		
Ile	Gln	Ser	His	Arg	Val	Arg	Leu	Asp	Glu	Ala	Phe	Asp	Phe	Val	Lys
		115					120					125			

Gln Arg Arg Gly Val Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
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 Leu Gln Leu Glu Thr Gln Val Leu Cys His
 145 150

<210> 8
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 8
 Ser Ser Cys Ser Thr Pro Leu Tyr Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Arg Lys Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn Val Ser Ala Asn
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Ser Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Asn Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Ser Ile Lys Asn Ala Gly Gly Arg Val Phe Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Arg Thr Asn Arg Val Lys Leu Asp Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Pro
 145 150

<210> 9
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 9
 Ser Ser Cys Gly Thr Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile
 1 5 10 15
 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp
 20 25 30
 Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp
 35 40 45
 Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val
 50 55 60
 Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile
 65 70 75 80
 Glu Tyr Ile Asp Ala Val Lys Asp Cys Arg Gly Arg Val Leu Val His
 85 90 95
 Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu
 100 105 110
 Met Met Lys Lys Arg Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys
 115 120 125
 Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu

130 135 140
 Leu Gln Phe Glu Ser Gln Val Leu Ala Thr
 145 150

<210> 10
 <211> 154
 <212> PRT
 <213> Homo sapiens

<400> 10
 Asn Val Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile
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 Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu
 20 25 30
 Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg
 35 40 45
 Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val
 50 55 60
 Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile
 65 70 75 80
 Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His
 85 90 95
 Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu
 100 105 110
 Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys
 115 120 125
 Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu
 130 135 140
 Leu Gln Tyr Glu Ser Glu Ile Leu Pro Ser
 145 150

<210> 11
 <211> 163
 <212> PRT
 <213> Homo sapiens

<400> 11
 Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu Val
 1 5 10 15
 Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro
 20 25 30
 Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly
 35 40 45
 Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser
 50 55 60
 Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn
 65 70 75 80
 Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu
 85 90 95
 Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser
 100 105 110
 Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met
 115 120 125
 Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly
 130 135 140

Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu
 145 150 155 160
 Ala Lys Glu

<210> 12
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 12
 Met Glu Gly Thr Met Met Met Gln Gln Arg Pro Val Leu Ser Gln Gln
 1 5 10 15
 His Pro Ser Phe Ile Leu Asn Ser Ser Pro Ala His Ser Pro Met Ala
 20 25 30
 Arg Glu Ile Asp Asn Phe Tyr Pro Glu Arg Phe Thr Tyr His Asn Val
 35 40 45
 Arg Leu Trp Asp Glu Glu Ser Ala Gln Leu Leu Pro His Trp Lys Glu
 50 55 60
 Thr His Arg Phe Ile Glu Ala Ala Arg Ala Gln Gly Thr His Val Leu
 65 70 75 80
 Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val Leu Ala
 85 90 95
 Tyr Ala Met Lys Gln Tyr Glu Cys Ser Leu Glu Gln Ala Leu Arg His
 100 105 110
 Val Gln Glu Leu Arg Pro Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg
 115 120 125
 Gln Leu Gln Ile Tyr Gln Gly Ile Leu Thr Ala Arg
 130 135 140

<210> 13
 <211> 737
 <212> PRT
 <213> Drosophila melanogaster

<400> 13
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 Thr Gln Ser Asn Asn Ser Asp Ile Gln Leu His Leu Gln Ser Met Phe
 20 25 30
 Tyr Leu Leu Gln Arg Glu Asp Thr Leu Lys Met Ala Val Lys Leu Glu
 35 40 45
 Ser Gln Arg Ser Asn Arg Thr Arg Tyr Leu Val Ile Ala Ser Arg Ser
 50 55 60
 Cys Cys Arg Ser Gly Thr Ser Asp Arg Arg Arg His Arg Ile Met Arg
 65 70 75 80
 His His Ser Val Lys Val Gly Gly Ser Ala Gly Thr Lys Ser Ser Thr
 85 90 95
 Ser Pro Ala Val Pro Thr Gln Arg Gln Leu Ser Val Glu Gln Thr Ala
 100 105 110
 Thr Glu Ala Ser Ser Lys Cys Asp Lys Thr Ala Asp Lys Glu Asn Ala
 115 120 125
 Thr Ala Ala Gly Asp Asn Lys Asn Thr Ser Gly Met Glu Glu Ser Cys
 130 135 140
 Leu Leu Gly Ile Asp Cys Asn Glu Arg Thr Thr Ile Gly Leu Val Val

145	Pro	Ile	Leu	Ala	Asp	Thr	Thr	Ile	His	Leu	Asp	Gly	Asp	Gly	Gly	Phe
					165						170					175
Ser	Val	Lys	Val	Tyr	Glu	Lys	Thr	His	Ile	Phe	Lys	Pro	Val	Ser	Val	
					180											190
Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Thr	Leu	His	Lys	Val	Ser	Lys	Lys	
		195					200					205				
Ala	Arg	Glu	Asn	Asn	Phe	Tyr	Ala	Ser	Gly	Pro	Ser	His	Asp	Trp	Leu	
	210					215					220					
Ser	Ser	Tyr	Glu	Arg	Arg	Ile	Glu	Ser	Asp	Gln	Ser	Cys	Leu	Asn	Glu	
225					230					235					240	
Trp	Asn	Ala	Met	Asp	Ala	Leu	Glu	Ser	Arg	Arg	Pro	Pro	Ser	Pro	Asp	
				245						250					255	
Ala	Ile	Arg	Asn	Lys	Pro	Pro	Glu	Lys	Glu	Glu	Thr	Glu	Ser	Val	Ile	
			260					265						270		
Lys	Met	Lys	Leu	Lys	Ala	Ile	Met	Met	Ser	Val	Asp	Leu	Asp	Glu	Val	
		275					280					285				
Thr	Ser	Lys	Tyr	Ile	Arg	Gly	Arg	Leu	Glu	Glu	Ile	Leu	Asp	Met	Asp	
	290					295					300					
Leu	Gly	Glu	Tyr	Lys	Ser	Phe	Ile	Asp	Ala	Glu	Met	Leu	Val	Ile	Leu	
305					310						315				320	
Gly	Gln	Met	Asp	Ala	Pro	Thr	Lys	Ile	Phe	Glu	His	Val	Tyr	Leu	Gly	
				325					330					335		
Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Lys	Asn	Gly	Val	
			340					345					350			
Arg	His	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe	Phe	Pro	Gly	
	355					360						365				
Thr	Phe	Glu	Tyr	Phe	Asn	Val	Arg	Val	Tyr	Asp	Asp	Glu	Lys	Thr	Asn	
	370					375					380					
Leu	Leu	Lys	Tyr	Trp	Asp	Asp	Thr	Phe	Arg	Tyr	Ile	Thr	Arg	Ala	Lys	
385					390					395					400	
Ala	Glu	Gly	Ser	Lys	Val	Leu	Val	His	Cys	Lys	Met	Gly	Val	Ser	Arg	
				405					410					415		
Ser	Ala	Ser	Val	Val	Ile	Ala	Tyr	Ala	Met	Lys	Ala	Tyr	Gln	Trp	Glu	
			420					425					430			
Phe	Gln	Gln	Ala	Leu	Glu	His	Val	Lys	Lys	Arg	Arg	Ser	Cys	Ile	Lys	
	435					440						445				
Pro	Asn	Lys	Asn	Phe	Leu	Asn	Gln	Leu	Glu	Thr	Tyr	Ser	Gly	Met	Leu	
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Asp	Ala	Met	Lys	Asn	Lys	Glu	Lys	Leu	Gln	Arg	Ser	Lys	Ser	Glu	Thr	
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Asn	Leu	Lys	Ser	Thr	Lys	Asp	Ala	Arg	Leu	Leu	Pro	Gly	Ser	Glu	Pro	
				485					490					495		
Thr	Pro	Leu	Ile	Gln	Ala	Leu	Asn	Gln	Ala	Lys	Ser	Lys	Ser	Thr	Gly	
		500						505					510			
Glu	Ala	Gly	Val	Thr	Pro	Asp	Gly	Glu	Glu	Glu	Asp	Gly	Ser	Arg	Met	
	515					520						525				
His	Arg	Arg	Ser	Ile	Ala	Gln	Lys	Ser	Gln	Arg	Arg	Met	Val	Arg	Arg	
	530				535						540					
Ser	Ser	Ser	Thr	Ser	Pro	Lys	Thr	Gln	Thr	Ala	Val	Val	Thr	Lys	Gln	
545					550					555					560	
Gln	Ser	Gln	Ser	Met	Glu	Asn	Leu	Thr	Pro	Glu	Arg	Ser	Val	Ala	Glu	
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Glu	Pro	Lys	Asn	Met	Arg	Phe	Pro	Gly	Ser	Asn	Gly	Glu	Asn	Tyr	Ser	
		580						585					590			
Val	Thr	Gln	Asn	Gln	Val	Leu	His	Ile	Gln	Lys	His	Thr	Pro	Leu	Ser	
		595				600						605				

Val	Arg	Thr	Arg	Ile	His	Asp	Leu	Glu	Ala	His	Arg	Ala	Asp	Gln	Leu
610						615					620				
Pro	Gln	Gln	Pro	Val	Trp	Thr	Ser	Leu	Thr	Lys	Leu	Ile	Thr	Gln	Thr
625					630					635					640
Ser	His	Leu	Gly	Lys	Ser	Val	Ser	Gly	Ser	Ser	Ser	Gly	Asn	Ile	Asp
				645					650					655	
Ser	Arg	Arg	Asp	Ser	Ser	Cys	Ser	Asp	Val	Phe	Ser	Ser	Gln	Val	Asp
			660					665					670		
Ser	Val	Phe	Ala	Lys	Asp	Glu	Gly	Glu	Lys	Arg	Gln	Arg	Arg	Lys	Thr
		675					680					685			
His	Ser	Trp	Thr	Glu	Ser	Leu	Gly	Pro	Ser	Gly	Gly	Ile	Val	Leu	Asp
690						695					700				
Pro	Thr	Pro	Gln	Gln	Gln	Lys	Gln	Gln	Ser	Asn	Ala	Ile	Leu	Arg	Pro
705				710						715					720
Arg	Gly	Thr	Arg	Gln	Arg	Glu	Leu	Pro	Ser	Arg	His	Ala	Ser	Trp	Gly
				725					730					735	

Ser

<210> 14
 <211> 509
 <212> PRT
 <213> Homo sapiens

<400> 14

Met	Thr	Leu	Ser	Thr	Leu	Ala	Arg	Lys	Arg	Lys	Ala	Pro	Leu	Ala	Cys
1				5					10					15	
Thr	Cys	Ser	Leu	Gly	Gly	Pro	Asp	Met	Ile	Pro	Tyr	Phe	Ser	Ala	Asn
			20					25					30		
Ala	Val	Ile	Ser	Gln	Asn	Ala	Ile	Asn	Gln	Leu	Ile	Ser	Glu	Ser	Phe
		35				40					45				
Leu	Thr	Val	Lys	Gly	Ala	Ala	Leu	Phe	Leu	Pro	Arg	Gly	Asn	Gly	Ser
		50				55					60				
Ser	Thr	Pro	Arg	Ile	Ser	His	Arg	Arg	Asn	Lys	His	Ala	Gly	Asp	Leu
65				70						75					80
Gln	Gln	His	Leu	Gln	Ala	Met	Phe	Ile	Leu	Leu	Arg	Pro	Glu	Asp	Asn
			85						90					95	
Ile	Arg	Leu	Ala	Val	Arg	Leu	Glu	Ser	Thr	Tyr	Gln	Asn	Arg	Thr	Arg
		100					105					110			
Tyr	Met	Val	Val	Val	Ser	Thr	Asn	Gly	Arg	Gln	Asp	Thr	Glu	Glu	Ser
		115				120						125			
Ile	Val	Leu	Gly	Met	Asp	Phe	Ser	Ser	Asn	Asp	Ser	Ser	Thr	Cys	Thr
		130				135					140				
Met	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Leu	Ile	His	Leu	Asp
145				150					155						160
Gly	Asp	Gly	Gly	Phe	Ser	Val	Ser	Thr	Asp	Asn	Arg	Val	His	Ile	Phe
				165					170					175	
Lys	Pro	Val	Ser	Val	Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Ser	Leu	His
			180					185					190		
Lys	Ala	Cys	Glu	Val	Ala	Arg	Ala	His	Asn	Tyr	Tyr	Pro	Gly	Ser	Leu
		195				200						205			
Phe	Leu	Thr	Trp	Val	Ser	Tyr	Tyr	Glu	Ser	His	Ile	Asn	Ser	Asp	Gln
		210				215					220				
Ser	Ser	Val	Asn	Glu	Trp	Asn	Ala	Met	Gln	Asp	Val	Gln	Ser	His	Arg
225				230						235					240
Pro	Asp	Ser	Pro	Ala	Leu	Phe	Thr	Asp	Ile	Pro	Thr	Glu	Arg	Glu	Arg

Thr	Glu	Arg	Leu	Ile	Lys	Thr	Lys	Leu	Arg	Glu	Ile	Met	Met	Gln	Lys
			245					250						255	
Asp	Leu	Glu	Asn	Ile	Thr	Ser	Lys	Glu	Ile	Arg	Thr	Glu	Leu	Glu	Met
		260						265					270		
Gln	Met	Val	Cys	Asn	Leu	Arg	Glu	Phe	Lys	Glu	Phe	Ile	Asp	Asn	Glu
		275						280					285		
Met	Ile	Val	Ile	Leu	Gly	Gln	Met	Asp	Ser	Pro	Thr	Gln	Ile	Phe	Glu
305					310						315				320
His	Val	Phe	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Asp	Leu
				325					330					335	
Gln	Asn	Arg	Gly	Val	Arg	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp
			340					345					350		
Asn	Phe	Phe	Pro	Gly	Val	Phe	Glu	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp
		355					360						365		
Glu	Glu	Ala	Thr	Asp	Leu	Leu	Ala	Tyr	Trp	Asn	Asp	Thr	Tyr	Lys	Phe
		370					375					380			
Ile	Ser	Lys	Ala	Lys	Lys	His	Gly	Ser	Lys	Cys	Leu	Val	His	Cys	Lys
385					390					395					400
Met	Gly	Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys
				405					410					415	
Glu	Tyr	Gly	Trp	Asn	Leu	Asp	Arg	Ala	Tyr	Asp	Tyr	Val	Lys	Glu	Arg
			420					425					430		
Arg	Thr	Val	Thr	Lys	Pro	Asn	Pro	Ser	Phe	Met	Arg	Gln	Leu	Glu	Glu
		435					440					445			
Tyr	Gln	Gly	Ile	Leu	Leu	Ala	Ser	Phe	Leu	Gly	Leu	Ile	His	Gly	Gly
		450				455					460				
Arg	Asp	Lys	Pro	Trp	Gly	Glu	Lys	Ser	Thr	Glu	Phe	Glu	Ser	Val	Asp
465					470					475					480
Leu	Val	Ser	Ile	Pro	Gly	Ser	Pro	Ser	Cys	Cys	Asn	Pro	Glu	Lys	Leu
				485					490					495	
Leu	His	Ile	Ser	His	Pro	Tyr	Leu	Thr	Pro	Ser	Ile	Lys			
			500					505							

<210> 15
 <211> 552
 <212> PRT
 <213> Homo sapiens

<400> 15
 Met Val Leu Arg Leu Trp Ser Asp Thr Lys Ile His Leu Asp Gly Asp
 1 5 10 15
 Gly Gly Phe Ser Val Ser Thr Ala Gly Arg Met His Ile Phe Lys Pro
 20 25 30
 Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Val Leu His Lys Ala
 35 40 45
 Cys Glu Val Ala Arg Arg His Asn Tyr Phe Pro Gly Val Ala Leu
 50 55 60
 Ile Trp Ala Thr Tyr Tyr Glu Ser Cys Ile Ser Ser Glu Gln Ser Cys
 65 70 75 80
 Ile Asn Glu Trp Asn Ala Met Gln Asp Leu Glu Ser Thr Arg Pro Asp
 85 90 95
 Ser Pro Ala Leu Phe Val Asp Lys Pro Thr Glu Gly Glu Arg Thr Glu
 100 105 110
 Arg Leu Ile Lys Ala Lys Leu Arg Ser Ile Met Met Ser Gln Asp Leu
 115 120 125

Glu	Asn	Val	Thr	Ser	Lys	Glu	Ile	Arg	Asn	Glu	Leu	Glu	Lys	Gln	Met
130						135					140				
Asn	Cys	Asn	Leu	Lys	Glu	Leu	Lys	Glu	Phe	Ile	Asp	Asn	Glu	Met	Leu
145					150					155					160
Leu	Ile	Leu	Gly	Gln	Met	Asp	Lys	Pro	Ser	Leu	Ile	Phe	Asp	His	Leu
				165					170					175	
Tyr	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Glu	Leu	Gln	Gly
		180						185					190		
Ser	Gly	Val	Asp	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp	Asn	Phe
	195						200					205			
Phe	Pro	Gly	Leu	Phe	Ala	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp	Glu	Glu
	210					215					220				
Thr	Thr	Asp	Leu	Leu	Ala	His	Trp	Asn	Glu	Ala	Tyr	His	Phe	Ile	Asn
225					230					235					240
Lys	Ala	Lys	Arg	Asn	His	Ser	Lys	Cys	Leu	Val	His	Cys	Lys	Met	Gly
				245					250					255	
Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys	Glu	Phe
			260					265					270		
Gly	Trp	Pro	Leu	Glu	Lys	Ala	Tyr	Asn	Tyr	Val	Lys	Gln	Lys	Arg	Ser
		275					280					285			
Ile	Thr	Arg	Pro	Asn	Ala	Gly	Phe	Met	Arg	Gln	Leu	Ser	Glu	Tyr	Glu
	290					295					300				
Gly	Ile	Leu	Asp	Ala	Ser	Lys	Gln	Arg	His	Asn	Lys	Leu	Trp	Arg	Gln
305					310					315					320
Gln	Thr	Asp	Ser	Ser	Leu	Gln	Gln	Pro	Val	Asp	Asp	Pro	Ala	Gly	Pro
				325					330					335	
Gly	Asp	Phe	Leu	Pro	Glu	Thr	Pro	Asp	Gly	Thr	Pro	Glu	Ser	Gln	Leu
			340					345					350		
Pro	Phe	Leu	Asp	Asp	Ala	Ala	Gln	Pro	Gly	Leu	Gly	Pro	Pro	Leu	Pro
		355					360					365			
Cys	Cys	Phe	Arg	Arg	Leu	Ser	Asp	Pro	Leu	Leu	Pro	Ser	Pro	Glu	Asp
	370					375					380				
Glu	Thr	Gly	Ser	Leu	Val	His	Leu	Glu	Asp	Pro	Glu	Arg	Glu	Ala	Leu
385					390					395					400
Leu	Glu	Glu	Ala	Ala	Pro	Pro	Ala	Glu	Val	His	Arg	Pro	Ala	Arg	Gln
			405						410					415	
Pro	Gln	Gln	Gly	Ser	Gly	Leu	Cys	Glu	Lys	Asp	Val	Lys	Lys	Lys	Leu
			420					425					430		
Glu	Phe	Gly	Ser	Pro	Lys	Gly	Arg	Ser	Gly	Ser	Leu	Leu	Gln	Val	Glu
	435					440						445			
Glu	Thr	Glu	Arg	Glu	Glu	Gly	Leu	Gly	Ala	Gly	Arg	Trp	Gly	Gln	Leu
	450					455					460				
Pro	Thr	Gln	Leu	Asp	Gln	Asn	Leu	Leu	Asn	Ser	Glu	Asn	Leu	Asn	Asn
465					470					475					480
Asn	Ser	Lys	Arg	Ser	Cys	Pro	Asn	Gly	Met	Glu	Val	Gly	Arg	Ala	Arg
				485					490					495	
Pro	Ala	Gly	Trp	His	Thr	Pro	Ser	Leu	Pro	Ser	His	Ser	Asn	Trp	Pro
		500						505					510		
Thr	Ser	Ala	Ser	Val	Val	Gly	Thr	Thr	Gly	Thr	Arg	His	His	Thr	Gln
	515					520						525			
Leu	Ile	Phe	Phe	Tyr	Cys	Leu	Leu	Trp	Ala	Pro	Ser	Ser	His	Leu	Gln
	530					535					540				
Gly	Pro	Glu	Gly	Ser	Phe	Thr	Gly								
545					550										

<211> 10
 <212> PRT
 <213> Homo sapiens

<400> 16
 Val His Cys Lys Met Gly Val Ser Arg Ser
 1 5 10

<210> 17
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Conserved homology region from eight DSPs having
 MAP-kinase phosphatase activity

<400> 17
 Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly
 1 5 10 15
 Thr Asn Ile Leu Ala Tyr Leu Met
 20

<210> 18
 <211> 22
 <212> PRT
 <213> Homo sapiens

<400> 18
 Val Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ala Thr Val
 1 5 10 15
 Leu Ala Tyr Ala Met Lys
 20

<210> 19
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
 tgtcgatgaa gtcacggtac tgctggaggg 30

<210> 20
 <211> 1416
 <212> DNA
 <213> Mus musculus

<400> 20
 atggccctgg tcacagtga cgttcgccc ccgggcagcg gcgcctccac gcccgtaggg 60
 ccctgggacc aggcggtcca gcgaaggagt cgactccagc gaaggcagag ctttgcggtg 120
 ctccgtaggg ctgtcctggg actgcaggat ggaggggaca atgatgatgc agcagaggcc 180

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agttctgagc caacagagaa ggccccgagt gaggaggagc tccacgggga ccagacagac 240
ttcgggcaag gatcccagag tccccagaag caggaggagc agaggcagca cctgcacctc 300
atggtacagc tgctgaggcc gcaggatgac atccgcctgg cagcccagct ggaggcagcc 360
cggcctcccc ggctccgcta cctgctggta gtttctacac gagaaggaga aggtctgagc 420
caggatgaga cggtcctcct gggcgtggat ttccctgaca gcagctcccc cagctgcacc 480
ctgggcctgg tcttgcccct ctggagtgc acccaggtgt acttagatgg agacgggggc 540
ttcagcgtga cgtctggtgg gcaaagccgg atcttcaagc ccatctccat ccagaccatg 600
tggggcacac tccaggtatt gcaccaagca tgtgaggcag ctctaggcag cggccttgta 660
ccgggtggca gtgccctcac ctgggccagc cactaccagg agagactgaa ctccgaacag 720
agctgcctca atgagtggac ggctatggcc gacctggagt ctctgcggcc tcccagcgcc 780
gagcctggcg ggtcctcaga acaggagcag atggagcagg cgatccgtgc tgagctgtgg 840
aaagtgttgg atgtcagtga cctggagagt gtcacttcca aagagatccg ccaggctctg 900
gagctgcgcc tggggctccc cctccagcag taccgtgaact tcatcgacaa ccagatgctg 960
ctgctggtgg cacagcggga ccgagcctcc cgcattcttc cccacctcta cctgggctca 1020
gagtggaacg cagcaaactt ggaggagctg cagaggaaca gggtcaccca catcttgaa 1080
atggcccggg agattgacaa cttctaccct gagcgcttca cctaccacaa tgtgcgcctc 1140
tgggatgagg agtcggccca gctgctgccg cactggaagg agacgcaccg cttcattgag 1200
gtgcaagag cacagggcac ccacgtgctg gtccactgca agatgggcgt cagccgctca 1260
gcggccacag tgctggccta tgccatgaag cagtacgaat gcagcctgga gcaggccctg 1320
cgccacgtgc aggagctccg gcccatcgcc cgcccaacc ctggcttcct gcgcagctg 1380
cagatctacc agggcatcct gacggccaga acctga 1416

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<210> 21

<211> 471

<212> PRT

<213> Mus musculus

<400> 21

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Met Ala Leu Val Thr Val Ser Arg Ser Pro Pro Gly Ser Gly Ala Ser
 1          5          10          15
Thr Pro Val Gly Pro Trp Asp Gln Ala Val Gln Arg Arg Ser Arg Leu
 20          25          30
Gln Arg Arg Gln Ser Phe Ala Val Leu Arg Gly Ala Val Leu Gly Leu
 35          40          45
Gln Asp Gly Gly Asp Asn Asp Asp Ala Ala Glu Ala Ser Ser Glu Pro
 50          55          60
Thr Glu Lys Ala Pro Ser Glu Glu Glu Leu His Gly Asp Gln Thr Asp
 65          70          75          80
Phe Gly Gln Gly Ser Gln Ser Pro Gln Lys Gln Glu Glu Gln Arg Gln
 85          90          95
His Leu His Leu Met Val Gln Leu Leu Arg Pro Gln Asp Asp Ile Arg
 100         105         110
Leu Ala Ala Gln Leu Glu Ala Pro Arg Pro Pro Arg Leu Arg Tyr Leu
 115         120         125
Leu Val Val Ser Thr Arg Glu Gly Glu Gly Leu Ser Gln Asp Glu Thr
 130         135         140
Val Leu Leu Gly Val Asp Phe Pro Asp Ser Ser Ser Pro Ser Cys Thr
 145         150         155         160
Leu Gly Leu Val Leu Pro Leu Trp Ser Asp Thr Gln Val Tyr Leu Asp
 165         170         175
Gly Asp Gly Gly Phe Ser Val Thr Ser Gly Gly Gln Ser Arg Ile Phe
 180         185         190
Lys Pro Ile Ser Ile Gln Thr Met Trp Ala Thr Leu Gln Val Leu His
 195         200         205
Gln Ala Cys Glu Ala Ala Leu Gly Ser Gly Leu Val Pro Gly Gly Ser
 210         215         220
Ala Leu Thr Trp Ala Ser His Tyr Gln Glu Arg Leu Asn Ser Glu Gln

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225          230          235          240
Ser Cys Leu Asn Glu Trp Thr Ala Met Ala Asp Leu Glu Ser Leu Arg
          245          250          255
Pro Pro Ser Ala Glu Pro Gly Gly Ser Ser Glu Gln Glu Gln Met Glu
          260          265          270
Gln Ala Ile Arg Ala Glu Leu Trp Lys Val Leu Asp Val Ser Asp Leu
          275          280          285
Glu Ser Val Thr Ser Lys Glu Ile Arg Gln Ala Leu Glu Leu Arg Leu
          290          295          300
Gly Leu Pro Leu Gln Gln Tyr Arg Asp Phe Ile Asp Asn Gln Met Leu
305          310          315          320
Leu Leu Val Ala Gln Arg Asp Arg Ala Ser Arg Ile Phe Pro His Leu
          325          330          335
Tyr Leu Gly Ser Glu Trp Asn Ala Ala Asn Leu Glu Glu Leu Gln Arg
          340          345          350
Asn Arg Val Thr His Ile Leu Asn Met Ala Arg Glu Ile Asp Asn Phe
          355          360          365
Tyr Pro Glu Arg Phe Thr Tyr His Asn Val Arg Leu Trp Asp Glu Glu
          370          375          380
Ser Ala Gln Leu Leu Pro His Trp Lys Glu Thr His Arg Phe Ile Glu
385          390          395          400
Ala Ala Arg Ala Gln Gly Thr His Val Leu Val His Cys Lys Met Gly
          405          410          415
Val Ser Arg Ser Ala Ala Thr Val Leu Ala Tyr Ala Met Lys Gln Tyr
          420          425          430
Glu Cys Ser Leu Glu Gln Ala Leu Arg His Val Gln Glu Leu Arg Pro
          435          440          445
Ile Ala Arg Pro Asn Pro Gly Phe Leu Arg Gln Leu Gln Ile Tyr Gln
          450          455          460
Gly Ile Leu Thr Ala Arg Thr
465          470

```

```

<210> 22
<211> 24
<212> DNA
<213> Artificial Sequence

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<220>
<223> Primer

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```

<400> 22
gccgcactgg aaggagacgc accg

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24

```

<210> 23
<211> 27
<212> DNA
<213> Artificial Sequence

```

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<220>
<223> Primer

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```

<400> 23
gcgccagctg cagatctacc agggcat

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27

```

<210> 24
<211> 28

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<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 24
 cactttccac agctcagcac ggatcgcc 28

<210> 25
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 25
 cgcagagact ccaggtcggc catagcc 27

<210> 26
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 26
 ggggttgagg gaaggggccg tgc 23

<210> 27
 <211> 6
 <212> PRT
 <213> Homo sapiens

<400> 27
 Asp Ala Asp Glu Tyr Leu
 1 5